

**CERVONEMELLA REARDONI GEN. ET SP. NOV. (NEMATODA: CLOACINIDAE)  
FROM THE STOMACHS OF SCRUB WALLABIES, DORCOPSIS SPP., IN PAPUA  
NEW GUINEA**

by I. BEVERIDGE\*

**Summary**

BEVERIDGE, I. (2001) *Cervonemella reardoni* gen. et sp. nov. (Nematoda: Cloacinidae) from the stomachs of scrub wallabies, *Dorcopsis* spp., in Papua New Guinea. *Trans. R. Soc. S. Aust.* 125 (2), 141-145, 30 November, 2001.

*Cervonemella reardoni* gen. et sp. nov. is described from the stomachs of *Dorcopsis hageni* Heller, 1897 and *D. luctuosa* (D'Albertis, 1874) from Papua New Guinea. The new species and genus are allocated to the Cloacininae Stossich, 1899 on the basis of having a large, cylindrical buccal capsule, four branches to the dorsal ray of the copulatory bursa and the externo-dorsal ray arising close to the lateral trunk. The bipartite submedian cephalic papillae indicate that the species and genus belong within the tribe Cloacininea (Stossich, 1899). The buccal capsule which is as long as wide, but lacks internal teeth, together with the anterior extensions of the mesal cells around the oesophageal bulb differentiate the new species from *Cloacina* von Einstow, 1898, *Auandelia* Mawson, 1977 and *Beveridgea* Mawson, 1980, the other genera of the Cloacininea.

KEY WORDS: Nematoda, marsupials, wallabies, new genus, *Dorcopsis*.

**Introduction**

The helminth parasites of forest wallabies of the genus *Dorcopsis* from Papua New Guinea are poorly known (Spratt *et al.* 1991) with current collections limited to a small range of specimens obtained from some of the more common species. Among the existing collections, Spratt *et al.* (1991) listed an undescribed genus belonging to the nematode tribe Cloacininea (Stossich, 1899) deposited in the South Australian Museum. The specimens were derived from material collected by T. Reardon from the wine-striped dorcopsis, *Dorcopsis hageni* Heller, 1897, during a field trip to the Madang area of Papua New Guinea in 1987. Recent examination of nematodes from the grey dorcopsis, *Dorcopsis luctuosa* (D'Albertis, 1874) in the collections of The Natural History Museum, London, revealed an additional specimen of the genus. The new taxon is described in this paper and its affiliations with other genera in the tribe Cloacininea are discussed.

**Materials and Methods**

Entire stomach contents, including parasites, were fixed in 10% formaldehyde following the death of the host. In the laboratory, nematodes were removed from stomach content, washed in water and cleared in lactophenol. Drawings were made using a drawing

tube attached to an Olympus BH2 microscope. Drawings of apical views of the heads of nematodes are oriented with the dorsal aspect uppermost; drawings of the bursa have the ventral surface uppermost. Measurements were made with an ocular micrometer. All measurements are in millimetres and are presented as the range from 10 male and 5 female specimens followed by the mean in parentheses. Types of the new species have been deposited in the South Australian Museum, Adelaide (SAMA), the Natural History Museum, London (BMNH) and the United States National Parasite Collection, Beltsville, Maryland (USNPC). Host nomenclature follows Groves & Flannery (1989).

*Cervonemella* gen. nov.

*Synonymy*: "Cloacininea gen. n., sp. n." of Spratt *et al.*, 1991, p. 63 (SAMA AHC 16999).

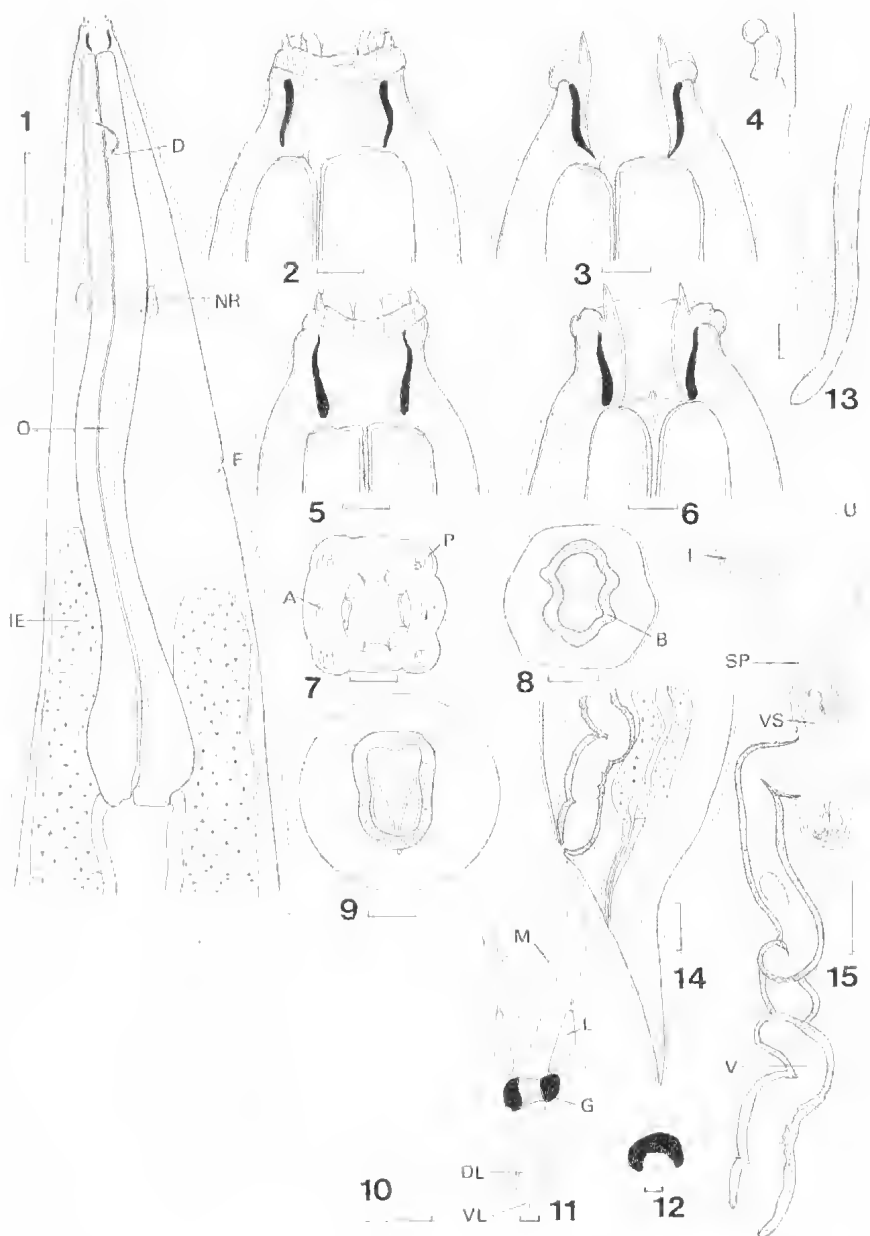
*Etymology*

The generic name is derived from *cervus*, or *cervos* in older orthography, meaning stag, but used figuratively by some Latin authors to mean "horned" and alludes to the horn like appearance of the incurved submedian cephalic papillae.

*Diagnosis*

Strongyloidea Weipland, 1863; Cloacininae Stossich, 1899; Cloacininea (Stossich, 1899); small nematodes, body covered with numerous fine annulations; cephalic collar present; 2 amphids; 4 bipartite, incurved submedian papillae; internal leaf

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Figs 1-15. *Ceryonemella reardonii* gen. et sp. nov. 1. Anterior end, lateral view. 2. Cephalic extremity, lateral view, dorsal aspect on left hand side. 3. Cephalic extremity, lateral view, median optical section, dorsal aspect on left hand side. 4. Submedian papilla, lateral view. 5. Cephalic extremity, dorsal view. 6. Cephalic extremity, dorsal view, median optical section. 7. Cephalic extremity, apical view. 8. Cephalic extremity, apical view, optical transverse section through anterior region of buccal capsule. 9. Cephalic extremity, apical view, optical transverse section through posterior region of buccal capsule. 10. Bursa, apical view. 11. Gubernaculum, spicule sheaths and genital cone, dorsal view. 12. Transverse optical section through gubernaculum. 13. Distal tip of spicule, lateral view. 14. Female tail, lateral view. 15. Female genital system, lateral view. Scale bars = 0.1 mm 1,10,14,15; 0.01 mm 2-9, 11-13. Legend: A, amphrid; B, buccal capsule; D, deirid; DL, dorsal lip of genital cone; E, secretory-excretory pore; G, gubernaculum; I, infundibulum; IE, intestinal extension; L, lateral thickening of spicule sheaths; M, median thickening of spicule sheaths; NR, nerve ring; O, oesophagus; P, submedian papilla; SP, sphincter; U, uterus; V, vagina; VL, ventral lip of genital cone; VS, vestibule.

crown of 8 elements; mouth opening sub-circular; buccal capsule as long as wide, walls sclerotised; oesophagus elongate, clavate, bulb surrounded by extensions of anterior intestinal cells. Bursa short, lobes distinct; ventro-lateral and ventro-ventral rays apposed; medio-lateral and postero-lateral rays apposed; antero-lateral ray divergent, shorter; externo-dorsal ray arises close to lateral trunk; dorsal ray with 4 branches. Genital cone with conical anterior lip bearing single central papilla and posterior lip with paired papillae; median and lateral thickenings of spicule sheaths present; gubernaculum present; spicules simple, elongate, alate. Female tail conical; vulva immediately anterior to anus; ovejector J-shaped, sphincters and infundibula short; egg thin-shelled, ellipsoidal.

Parasitic in the stomachs of macropodid marsupials.

*Cervonemella reardonii* sp. nov.

(FIGS 1-15)

*Holotype*: ♂, from stomach of *Dorcopsis hageni* Heller, 1897, Usiño, Madang, Papua New Guinea, May 1987, coll. T. Reardon, SAMA AHC 31463.

*Allotype*: ♀, same data, SAMA AHC 31464.

*Paratypes*: Same data, 14 ♂♂, 5 ♀♀, SAMA AHC 31465; 1 ♂, BMNH 2001.4.10.14; 1 ♀, USNPC 91143; slide preparations of apical view of mouth and bursa SAMA AHC 28391.

*Other material examined*: from stomach of *Dorcopsis lucinosa* (D'Alberis, 1874); 1 ♂, Veikabu Creek, Papua New Guinea, coll. I. Owen, BMNH 1981.216.

*Site in host*

Stomach.

*Etymology*

The species is named after the collector of the types, T. Reardon, of the South Australian Museum.

*Description*

Small, slender nematodes; cuticle with numerous fine transverse annulations 0.010 apart; cervical cuticle closely applied to body, becoming slightly inflated in oesophageal region. Mouth opening sub-circular; distinct cephalic collar present, bearing 4 submedian papillae and 2 amphids. Submedian papillae elongate, divided into proximal and distal segments, projecting anteriorly from peri-oral cuticle with distal extremities incurved; proximal segment elongate, subcylindrical with outer margin convex, 0.004 long; distal segment short, ovoid, 0.0013 in diameter. Buccal capsule cylindrical, approximately

as long as wide, walls sinuous in lateral and dorso-ventral views, tapering at extremities. Buccal capsule approximately hexagonal in apical view near anterior extremity, becoming approximately oval in shape near posterior end. Internal leaf crown elements 8 in number, rounded distally, arising from full length of internal wall of buccal capsule. Peri-oral cuticle not inflated into lip-like lobes attached to each leaf crown element. Oesophagus simple, elongate, claviform; anterior half broader than third quarter; distal quarter forming clavate bulb; lining of oesophagus without rows of sclerotised bosses or denticles. Nerve ring in mid-oesophageal region; deirids setiform, in anterior oesophageal region, anterior to nerve ring; secretory-excretory pore between nerve ring and oesophago-intestinal junction. Anterior intestinal cells enlarged, forming paired elongate appendages extending anteriorly alongside oesophageal bulb.

*Male*

Total length 5.1-6.8 (5.8); maximum width 0.31-0.39 (0.35); buccal capsule 0.020-0.025 (0.022) long x 0.025-0.030 (0.026) wide; oesophagus 0.56-0.71 (0.66) long; nerve ring to anterior end 0.20-0.27 (0.25); secretory-excretory pore to anterior end 0.25-0.44 (0.39); deirid to anterior end 0.08-0.17 (0.13).

Bursa without prominent divisions between lobes. Ventral lobes joined ventrally; lateral lobes and ventral lobes joined. Dorsal lobe similar in length to lateral lobes. Dorsal ray dividing to produce 4 branchlets; primary division occurring at mid-length, giving rise to paired external branchlets; external branchlets directed postero-laterally, not reaching margin of bursa; internal branchlets arising immediately after primary bifurcation, branchlets directed postero-laterally, almost reaching margin of bursa. Externo-dorsal ray arising close to lateral rays, not reaching margin of bursa. Postero-lateral and ventro-lateral rays apposed, reaching margin of bursa; antero-lateral ray divergent, shorter than other lateral rays; not reaching margin of bursa; ventro-lateral and ventro-ventral rays apposed, reaching margin of bursa. Gubernaculum present, heavily sclerotised, ovoid in shape, 0.020-0.030 (0.022) long x 0.040-0.050 (0.042) wide; median and paired lateral thickenings present at junction of spicule sheaths. Genital cone prominent; anterior lip conical, with single papilla at apex; posterior lip shorter than anterior lip, with pair of claviform papillae; spicules simple, elongate, with tubular shaft; proximal tips irregularly knobbed; distal tips blunt, slightly curved; spicule ala prominently ribbed, terminating distally, anterior to spicule tip; spicules 1.75-2.18 (2.01) long.

*Female*

Total length 6.8-8.9 (8.0); width in mid-body

region 0.38-0.45 (0.41), body swollen in region of tail, 0.40-0.50 (0.44) in width; buccal capsule 0.020 (0.020) long by 0.027-0.030 (0.030) wide; oesophagus 0.70-0.78 (0.74) long; nerve ring to anterior end 0.25-0.30 (0.27); secretory-excretory pore to anterior end 0.40-0.47 (0.44); deirid to anterior end 0.12-0.14 (0.13).

Tail short, conical, 0.30-0.35 (0.32) long; vulva immediately anterior to anus, 0.42-0.49 (0.47) from posterior end; vagina slightly convoluted, 0.42-0.68 (0.54) long; ovejector J- shaped, sphincters and infundibulus as long as or shorter than vestibule; uteri prodelphic; egg ellipsoidal, thin-shelled, 0.07-0.08 (0.07) x 0.03-0.04 (0.04).

### Discussion

The nematodes described above belong to the Strongyloidea, based on the presence of a well developed, sclerotized buccal capsule and a copulatory bursa in the male, while the presence of four branches to the dorsal ray and a cylindrical buccal capsule place them in the family Cloacinae. The externo-dorsal ray arising close to the lateral trunk, places the species within the sub-family Cloacinae, a sub-family restricted to the stomachs and oesophagi of macropodid marsupials (Lichtenfels 1980). Within the sub-family Cloacinae, six tribes are currently recognized (Beveridge 1987). The presence of a simple, elongate oesophagus lacking obvious division into corpus, isthmus and bulb, together with bipartite submedian cephalic papillae, places the species in the tribe Cloacinae, which currently contains three genera, the large genus *Cloacina* von Linstow, 1898, and the monotypic genera *Arundelia* Mawson, 1977 and *Beveridgea* Mawson, 1980. The species described here differs from *Cloacina* and *Arundelia* in having a relatively deep buccal capsule. In *Beveridgea*, the buccal capsule is longer than wide and is armed internally with teeth (Mawson 1980), which are lacking in the species described above. In addition, the species described here differs from all other genera in the tribe in having the anterior intestinal cells forming paired elongate extensions on either side of the oesophageal bulb. This character occurs in other tribes of the Cloacinae, such as in the Pharyngostromylinea Popova, 1952 in the genera *Pharyngostromylylus* Yorke & Maplestone, 1926 and *Dorcopsisstromylylus* Smales, 1982 and has

been utilised as a character of generic significance (Beveridge 1982; Smales 1982). Analogous specializations of the anterior intestinal cells have been reported in the tribe Macropostromylinea, in the genera *Alucostoma* Mawson, 1977, *Macropostromylylus* Yorke & Maplestone, 1926 and *Trigonostomema* Beveridge, 1981 (Beveridge 1981, 1985, 1986), as well as in tribe Zoniolammina in the genus *Cassimema* Beveridge & Johnson, 1981. In the tribe Labiostromylinea, similar structures form distinctive diverticula between the oesophagus and intestine (Smales 1994, 1995). However, in all of these instances, although the anterior intestinal cells are enlarged, they do not extend anteriorly to envelop the oesophageal bulb. The structures seen in the species described here thus appear to be analogous to those found in the Pharyngostromylinea, but are described for the first time in the Cloacinae. Since the species described here is clearly different from the three genera currently known within the Cloacinae, a new genus has been created to accommodate it.

The material described comes from two closely related species of scrub wallaby belonging to the genus *Dorcopsis*. The single specimen in BMNH has associated with it the host name *Dorcopsis veterum* (Lesson & Garnot, 1826). Groves & Flannery (1989) considered this name a *nomen dubium* and indicated that the only species of *Dorcopsis* occurring in the Port Moresby region, the locality of the present collection, was *D. luctuosa*. Consequently, the host name utilised here is that of *D. luctuosa* rather than the "*D. veterum*" of the label.

The finding of a new genus of cloacine nematode in scrub wallabies from Papua New Guinea is not surprising given the limited extent to which the parasite fauna of New Guinea macropodids has been investigated and suggests that more detailed studies will uncover additional novel cloacine genera.

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